AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

LISTING OF CLAIMS

1. (PREVIOUSLY PRESENTED) A method for PCR amplification and detection of nucleotide sequences, comprising:

using an array of a plurality of microspots forming analytical positions, said microspots including as probe molecule at least one immobilized oligonucleotide which is hybridizable with a target sequence to be identified of a DNA fragment;

applying an analyte solution including PCR reagents and a plurality of target sequences to the microspots in such a way that it completely covers the array;

subjecting the array to a thermocycling process to amplify the target sequences; and

detecting hybridization events on probe molecules immobilized at one analytical position with the aid of a microelectrode arrangement.

2. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein a hydrophilic reaction layer having coupling groups for covalent binding of probe molecules is used.

3. (PREVIOUSLY PRESENTED) The method as claimed in claim 2, wherein the reaction layer used is a hydrogel.

4. (PREVIOUSLY PRESENTED) The method as claimed in claim 2, wherein a free-radically crosslinkable hydrogel based on at least one of acrylamide with maleic anhydride and glycidyl (meth)acrylate as coupling groups is used.

5. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein a biochip including a semiconductor layer and an insulating layer connected therewith is used, the side of the insulating layer, which faces away from the semiconductor layer, carrying the electrode arrangement and the reaction layer.

6. (PREVIOUSLY PRESENTED) The method as claimed in claim 5, wherein the semiconductor layer used is a silicon layer.

7. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein an analyte solution is used which includes an external primer pair.

8. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein an analyte solution is used which includes a plurality of DNA fragments having a different target sequence and a single external primer pair suitable for the amplification of all target sequences.

9. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein an analyte solution is used which includes an external primer acting together with the one strand of at least one DNA fragment and in that a counter strand is elongated within a reaction layer with the aid of an internal primer immobilized there.

10. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein an analyte solution is used in which an internal primer pair specifically hybridizing with a target sequence is immobilized in a microspot.

11. (PREVIOUSLY PRESENTED) A device for carrying out the method as claimed in claim 1, comprising a biochip having an array of microspots which form analytical positions and which are covered by a hydrophilic reaction layer.

12. (PREVIOUSLY PRESENTED) The device as claimed in claim 11, wherein the biochip with hydrophilic reaction layer is arranged in a housing having an opening for an analyte solution.

13. (PREVIOUSLY PRESENTED) The device as claimed in claim 11, wherein the biochip contains carriers for the microspots as substrate.

14. (PREVIOUSLY PRESENTED) The device as claimed in claim 11, wherein the substrate consists of a semiconductor material, to which an insulating layer has been applied.

15. (PREVIOUSLY PRESENTED) The device as claimed in claim 11, wherein the biochip is a prefabricated silicon chip having thin-layer microelectrodes implemented therein.

16. (PREVIOUSLY PRESENTED) The method as claimed in claim 3, wherein a free-radically crosslinkable hydrogel based on at least one of acrylamide with maleic anhydride and glycidyl (meth)acrylate as coupling groups is used.

17. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein an analyte solution is used which includes a primer pair which hybridizes with a target DNA outside a target sequence.

18. (PREVIOUSLY PRESENTED) The method as claimed in claim 1, wherein an analyte solution is used which includes an external primer acting together with the one strand of at least one DNA fragment and in that a counter strand is elongated within a reaction layer with the aid of a primer which specifically hybridizes with the target sequence, immobilized there.

19. (PREVIOUSLY PRESENTED) The device as claimed in claim 11, wherein the substrate consists of silicon, to which an insulating layer has been applied.

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